The Convergence of Psychopathy, Self-Rated Vulnerability, and Other-Rated Vulnerability

By

Sarah Wheeler

A thesis
Submitted in partial fulfillment
Of the requirements for the degree
Master of Arts

Department of Psychology
BROCK UNIVERSITY
St. Catharines, Ontario

December, 2010

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Abstract

Previous research has found that victims of crime tend to exhibit asynchronous movement (e.g. Grayson & Stein, 1981), and the fact that victims display different body language suggests that they may be sending inadvertent signals to their own vulnerability (e.g. Murzynski & Degelman, 1996). Body language has also been linked with self identification as a victim (Wheeler et al., 2009), and self-identification has been found to act as a proxy for more severe victimization (Baumer, 2002) and greater fear of crime (Greenberg & Beach, 2004). The first prediction in the present study, then, was that self-perceived vulnerability would be correlated with body language, while number of previous victimizations may or may not show the same relationship. Findings from the present study indicate that self-perceived vulnerability exhibits a positive correlation with the body language cues that approaches significance r (10) = .45, p =.07, one-tailed. Different types of victimization, however, were not significantly correlated with these cues. A second goal of the study was to examine the relationship between psychopathic traits and accuracy in judgments of vulnerability. Seventy male participants rated the vulnerability of 12 female targets filmed walking down a hallway who had provided self-ratings of vulnerability. Individuals scoring higher on Factor 2 and total psychopathy were significantly less discrepant from target self-ratings of vulnerability, r (64) = -.39, p < .001; r (64) = -.29, p >.01, respectively. The final purpose of this study was to determine which body language cues were most salient to raters when making judgments of vulnerability. Participants rated the apparent vulnerability of a target in 7 video clips portraying each body language cue in isolation and a natural walk. Results of repeated measures analyses indicate that the videos rated as most vulnerable to victimization were those displaying low energy and lack of synchrony, followed by wide stride, short stride, and stiff knees, while the video displaying neck stiffness

did not receive significantly different ratings from the model's natural walk. Replication with a larger sample size is necessary to increase confidence in findings and implications.

Acknowledgements

I would like to sincerely thank the members of my departmental committee (Dr. Michael Ashton and Dr. Kathy Belicki) for their many hours of help, advice, and editorial services. Most especially, my faculty supervisor, Dr. Angela Book, has provided unending assistance and multitudinous opportunities for professional growth over the past few years. Kimberly Costello has also provided excellent assistance in this study, and I thank her as well.

Of course, I would not have been able to overcome the past year's difficulties and complete this work without the incredible help and support of my family and my partner. To them I owe a great deal, and I gratefully acknowledge all of their sacrifices for me.

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Introduction

Body language has been found to be related to a number of variables that reflect increased vulnerability, including lack of dominance, submissiveness, as well as past history of victimization (Montepare & Zebrowitz-McArthur, 1998; Richards, Rollerson, & Phillips, 1991). If these body language cues are reliable indicators of vulnerability, it is possible that other individuals, specifically perpetrators of violence, may be picking up on these cues. One trait related to victimization of other people is psychopathy (Hare & Jutai, 1983, Hare, 1993). Not only are psychopathic individuals more likely to commit crimes in general (Hare, 1993), they commit more violent crimes (Bonta, Law, & Hanson, 1998; Hemphill, Hare, & Wong, 1998; Skeem & Mulvey, 2001), and these crimes tend to be more severe (Wormith, Olver, & Stevenson, 2007) and instrumental (Walsh, Swogger, & Kosson, 2009) than the violent crimes committed by nonpsychopathic offenders. Obviously, this would have a negative impact on victims and illustrates the importance of examining these cues.

The current study had three purposes. The first objective was to replicate the relationship between body language and vulnerability to victimization, and determine whether this relationship is specific to a history of victimization or to self-perceived vulnerability. Second, we wanted to replicate the relationship between psychopathy and accuracy in rating vulnerability in others, as found in previous research (Book, Quinsey, & Langford, 2007; Wheeler, Book, & Costello, 2009). We extended our study to examine whether the relationship would replicate when the targets were required to wear uniform clothing. Finally, we wanted to examine the salience of the individual body movement cues (e.g. stride length, synchrony of movement) in rating vulnerability. The following sections of the thesis describe the bodies of research that

examine body language, victimization, psychopathy, and the assessment of vulnerability in others.

Body Language and Vulnerability

The research on the relationship between body language and vulnerability can be informed by examining traits such as dominance and submissiveness. One study conducted by Richards, Rollerson, and Phillips (1991) found that these traits could be distinguished by motion cues. They had male participants view video clips of women engaged in conversation regarding a controversial topic with a male confederate, then asked how dominant each woman was perceived to be. Afterwards, a separate panel evaluated the women's body movements. The results indicated that women perceived as more submissive used their hands and feet more frequently when gesturing than dominant women. In contrast, dominant women changed sitting positions more often than the submissive women, and used arms and legs rather than hands and feet.

Similarly, Montepare and Zebrowitz-McArthur (1988) recorded the gaits of targets from a range of age groups. Before providing a sample of their typical gait, however, participants donned black lycra suits that had small reflective discs adhered to major joints such as ankles, knees, and elbows. The resulting target stimuli were displayed in two ways. In the first method, participants could view targets in regular light, such that the lycra suit, body shape, and movement were visible. In the second method, participants could only view targets in point light, meaning that movement was only visible via the reflected light at targets' joints. The point light method allowed for a more "pure" analysis of movement without confounding factors such as clothing and body shape. After viewing the stimuli, participants were asked to rate the targets' traits, walking style, and ages. The authors found that youth-associated movement cues

such as fluidity, bounce, arm movement, stride length, knee bend and hip movement contributed to an overall impression of powerfulness, a component of which was invulnerability. Results were replicated in point light and full display, and remained after factoring out masculine gait qualities, sex, and perceived age.

Given the relationship between body language and submissiveness, dominance, and powerfulness, it would be logical to assume that the relationship would extend to vulnerability. Murzynski and Degelman (1996) specifically investigated vulnerability and recorded women whose gait incorporated four body movement cues (stride length, body-limb movement, weight shift, and foot movement) in order to create clips portraying two distinct gaits composed of typical victim movement. They also recorded women whose gait incorporated the opposite movements in order to create clips portraying typical non-victim movement. After individually viewing these stimuli, 33 police officers and 41 student raters rated the two prototypical victim clips as portraying less confidence and more vulnerability to sexual assault.

In order to determine if vulnerable body movement cues were perceived by victimizers, Grayson and Stein (1981) investigated the physical attributes that differentiate victims from non-victims. Using inmates convicted of assault to identify vulnerable individuals, the researchers found that those judged as most vulnerable-looking were distinguishable by five distinct motion cues. Those identified as potential victims displayed longer or shorter strides, and weight that shifted up/down, forward/back, or side-to-side. They also tended to use only one side or part of their body when moving, and tended to lift their feet. The authors concluded that in general, vulnerable individuals illustrated less synchronous movement than those judged as less vulnerable.

The research, then, supports the notion that potential victims may exhibit certain body movements that distinguish them from less vulnerable individuals. In further support of this, Gunns, Johnston, and Hudson (2002) filmed 71 female targets in such a way that only their movements were visible. Women selected from a range of perceived vulnerability levels were selected for inclusion in the study. Later, male and female raters assessed how easy it would be to rape or mug each 'target', and these ratings were correlated with each target's score on the Grayson and Stein (1981) movement cues. Results showed that researchers' body cue scores accounted for 76.5% of the variance in vulnerability assessments. Results from a multiple regression also indicated that out of all 9 body language cues (stride length, foot movement, arm swing, energy, constraint, speed, age, weight, and height), foot movement and speed independently predicted ease of attack. That is, the slower a target walked, and the higher they lifted their foot, the more vulnerable they appeared. From the literature described above, it is clear that potential victims differ from nonvictims in their body movements (for a summary, see Table 1).

Table 1

Body Movements Indicating Vulnerability as Reported in Previous Studies

Body Movement	Previous Studies
Short or long strides	Grayson & Stein, 1981; Montpare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996; Gunns, Johnston, & Hudson, 2002
Abnormally wide strides	Grayson & Stein, 1981

Straight knees	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988
Non-erect posture	Grayson & Stein, 1981
Weight shift that is either side-to-side, back and forth, or bouncing	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996
Isolated and unilateral body movement	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996
Restrained energy that is either abnormally low or high	Grayson & Stein, 1981; Gunns, Johnston, & Hudson, 2002
Head movements that are separate from the spine	Grayson & Stein, 1981
Downward gaze	Grayson & Stein, 1981
Lifted feet	Grayson & Stein, 1981; Murzynski & Degelman, 1996; Gunns, Johnston, & Hudson, 2002
Arms that are either held close to the body or moved only partially	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988; Gunns, Johnston, & Hudson, 2002

However, some research has examined other factors that may impact ratings of vulnerability. For example, research by Johnston, Hudson, Richardson, Gunns, and Garner (2004) indicates that external vulnerability cues differ depending upon targets' judgement of the safety of the external environment. The authors trained a group of women to appear more invulnerable by utilizing the Grayson and Stein (1981) movement cues, and then recorded this group and an untrained group of women as they walked, asking both groups to imagine being in a safe or unsafe environment. They showed videos of these two groups to viewing participants and asked them to rate the targets on ease of attack. Those untrained in the Grayson and Stein (1981) movement cues were rated as significantly more vulnerable in the safe environment condition than in the unsafe condition, while those trained showed no difference between the conditions. That is, trained and untrained targets were perceived as equally invulnerable while they felt threatened, but trained targets maintained this invulnerability when they felt safe, while untrained targets lapsed into vulnerability when they felt safe. These findings illustrate that transient cognitive and emotional states translate readily into body movement, and thus into others' perceptions of one's strength or weakness. However, it also indicates that a less vulnerable gait may be instinctive, as untrained targets appeared as invulnerable as the trained targets in the unsafe condition. Therefore, defense training in external vulnerability cues may serve not to instruct per se, but to encourage potential victims to exhibit these instinctual invulnerability cues when they are feeling both safe and unsafe.

Given that merely imagining one's surroundings to be safe or unsafe resulted in a change in perceived vulnerability, we wish to address the gap in literature regarding body language cues being indicative of one's self-perception of vulnerability. While it may be that body language merely reflects past victimizations, the possibility exists that body language actually reflects self-

perception which is a *result of* past victimizations. In other words, self-perception may be as important, or indeed more important, than actual number, type, or severity of past victimizations.

Theriot, Dulmus, Sowers, and Johnson's (2005) research addresses this issue as they investigated self-identified bullying victims in rural elementary and middle school children. They administered a questionnaire that included global items such as how often they had been bullied, and specific items such as how often they had experienced certain types of bullying behaviours. They found that students who identified themselves as victims of bullying experienced more specific types of bullying, more total bullying, and more frequent bullying. Stockdale, Hangaduambo, Duys, Larson, and Sarvela (2002) also found that students who self-identified as bullying victims experienced more frequent verbal and physical bullying in the previous 7 days than those who did not self-identify as a bullying victim. These results reinforce the idea that self-identification as a victim is at least a proxy for objective measures of past victimization.

These findings replicate outside of developmental research as well. Greenberg and Beach (2004) interviewed 422 adult victims of burglary and theft in the Pittsburgh, Pennsylvania area via telephone, and collected information regarding demographics, type of crime experienced, the value of the missing property, the emotional impact of the crime, and the kind of influence social ties had on the decision to report the crime to the police, or self-identify as a victim. Among other findings, the results of a logistic regression revealed that those who had lost objects of higher monetary value were more likely to self-identify as a victim by reporting to authorities. Of particular importance to the present study, the authors also found that those who experienced more fear were more likely to identify themselves as victims to police. In contrast, those who felt more angry and upset, and those who perceived the crime to be more serious were

not more likely to self-identify as a victim. The finding that those experiencing more fear reported to the police more often is not surprising, as fear of crime reflects a sense of vulnerability, and identifying oneself as a victim to police also reflects a personal sense of vulnerability.

Baumer (2002) also found that self-identification as a victim to police was linked with greater severity of crime. Using data from a United States national data source, the author found that those who underwent aggravated assault with a weapon that resulted in hospitalization were more likely to notify police of the crime. Analysis also showed that self-identification as a victim increased if robbery occurred which resulted in hospitalization and the lost property was of greater worth.

These studies show that variety of crime, overall amount of crime, frequency of crime (Theriot et al., 2005), more costly crime (Baumer, 2002; Greenberg & Beach, 2004), actual severity of crime versus perceived severity of crime (Baumer, 2002), and increased fear (Greenberg & Beach, 2004) are linked with self-identification as a victim, or self-perception of vulnerability. Regarding vulnerable body language cues, this implies that global measures of self-perception of vulnerability would be at least of equal importance to objective assessments of prior victimization, as asserted by Theriot et al. (2005). Yet, combined with the Johnston et al. (2004) findings, we would suggest that self-perceived vulnerability may be more important than objective measures as their study revealed that, within each target, the number of vulnerable body movements increased with an increased sense of safety. In other words, holding past victimizations constant, vulnerable body movements still changed with an altered sense of personal vulnerability.

Thus, in the present study, we measured both self-perceived vulnerability and past victimizations of targets and correlated these with the number of vulnerable body language cues displayed in the target's gait as found in previous research (Grayson & Stein, 1981). We predicted that self-perceived vulnerability would be significantly correlated with body language cues, while past victimizations would not be.

Psychopathy and Victim Selection

Psychopathy is an important construct regarding the perception of vulnerability, as psychopaths are partially diagnosed by their victimization of others (Hare, 1991, 2003), and are responsible for far more than their proportion of crime given their frequency in the population (Hare & Jutai, 1983). Psychopathy as a construct was first clinically investigated in Hervey Cleckley's *The Mask of Sanity* in 1941, and its most popular operationalization is the Psychopathy Checklist-Revised (PCL-R; Hare, 1991, 2003), which assesses two major components of psychopathic traits. As presented in Hare's (1993) book *Without Conscience,* Factor 1, assessing interpersonal and affective traits, includes the characteristics of emotional shallowness, failure to accept responsibility for one's own actions, callousness and lack of empathy, manipulation and cunning, lack of remorse and guilt, a grandiose sense of self-worth, pathological lying, and glibness or superficial charm. Factor 2, or unstable and antisocial traits, encompass such traits as a parasitic lifestyle, irresponsibility, juvenile delinquency and early behavioural problems, poor adult behavioural controls, lack of realistic long-term goals, promiscuous sexual behaviours, a need for stimulation and proness to boredom, impulsiveness, and their conditional release from prison, ie. parole, is often revoked.

Several studies have asserted that these strategies are an alternative evolutionary adaptation that facilitates psychopaths' reproductive and survival success by not co-operating

with others (Frank, 1988; Harris, Rice, & Quinsey, 1994; Mealey, 1995; Seto, Khattar, Lalumiere, & Quinsey, 1997). Mealey (1995) suggests that the low incidence of psychopathy in the population (Hare 1993; Skilling, Quinsey, & Craig, 2001) is consistent with this hypothesis, stating that cheating is a successful strategy only when cooperators are more numerous than cheaters, and when the benefits of cheating are greater than the costs of cheating. Put differently, if psychopaths were a greater percentage of the general population, much of the population would cease to cooperate and trust, psychopathic tactics would lose their effectiveness, and psychopathy would decline due to natural selection (Dugatkin, 1992).

In order for psychopathy to be a successful survival strategy, psychopaths would not only need to be a small percentage of the population, they would also need to successfully mimic cooperator tactics in order to get other cooperators to trust them (Trivers, 1971). Two such critical cooperator tactics are indignation and empathy, as they communicate to others that an individual understands and embraces the concept of fairness (Frank, 1988). Psychopaths would also need to benefit in conflict with others, perhaps via their general tendency to show erratic aggression and retaliation, which is one of several stable, successful strategies suggested by Dawkins (1976).

Book and Quinsey (2004) investigated these theories using a sample of 157 community and incarcerated participants with a range of psychopathy scores. They predicted that those scoring higher in psychopathy would show increased scores of indignation and aggression. They also predicted, however, that they would score lower on empathy measures, as psychopathy is partially identified by a lack of empathy (Hare, 1993; Patrick, Cuthbert & Lang, 1994). Results supported their hypotheses in that higher psychopathy scores were related to higher scores of indignation and aggression. However, the prediction that psychopathy would be related to

decreased empathy was not borne out. These results speak to the evolutionary advantage of the psychopathic traits, as indignation and empathy would convince non-psychopathic targets that psychopaths are concerned with fairness, and increased aggression, while risky, is a stable evolutionary strategy.

Harpending and Sobus (1987) also emphasize that psychopathy, as a cheater strategy, can succeed in an evolutionary sense if psychopaths are highly mobile. They highlight research by Axelrod (1984) and Axelrod and Hamilton (1981) that used computer simulations of simple social interactions to determine whether the strategy of cooperating or cheating would be stable or selected for. While cooperation was a stable strategy in multiple interactions, cheating became more successful in single or sporadic interactions in which the cheater did not immediately encounter the cheated. That is, if a cheater was highly mobile and did not revisit the "scene of the crime" for at least some time, the imperfect memory of the previously cheated and the naiveté of unsuspecting future victims would enable the cheater to continue to victimize. Harpending and Sobus (1987) emphasize that psychopathy is known both for victimization of others and for high mobility (Robins, 1971). Thus, because of the psychopath's mobility and tendency to victimize others, they seem likely candidates for evolutionary survival alongside nonpsychopaths.

Because psychopaths often victimize others, they should also be able to perceive the vulnerability cues that would allow them to successfully do so. This ability characterizes Frank's (1988) successful opportunist, a social predator who may also be described as a successful psychopath. To the successful opportunist, emotional states are cues to the suitability of others as victims. The successful opportunist assumes that fearful or hesitant individuals would be easier to overcome, whereas angry or confident individuals would be more challenging to

subdue. According to Frank's (1988) theory, successful opportunists should be able to perceive cues of vulnerability, including facial expressions of emotions, as well as body language, as cues to an individual's suitability as a victim. The ability of psychopathic individuals to use emotional and body language cues are discussed below.

Emotion Perception and Psychopathy

Emotion is a universal tool which aids in survival and communication (Darwin, 1872; Eibl-Eibesfeldt, 1974; Ekman, 1970). Emotion is also socially- motivated in that it helps us navigate our social world (Griffiths, 2002; Hinde, 1985), and displays of it can be mimicked (Ekman, 1992, 1993; Fridlund, 1994) in order to achieve social goals. This mimicking strategy is facilitated by the use of display rules, which are socially-endorsed guidelines that dictate which emotions are appropriate to show in various contexts, and how these emotions are to be shown (Ekman, 1980). These display rules are particularly useful to psychopaths who process emotions, like fear, cognitively (Kiehl et al., 2001). Instead of displaying emotions because they are felt, psychopaths may use display rules to mimic emotion at appropriate times and places to earn social acceptance. These mimicked emotions may be used to deceive cooperators, or to disguise ill-intent (Frank, 1988). Use of mimicked emotion is logical given the typical characteristics of psychopathy: skill at deception (Hare, 1993; Seto, et al., 1997), skill at manipulation (Hare, 1993), and taking advantage of others' good intentions (Mealey, 1995).

However, ability in sending emotional information (via psychopaths' mimicking) is reflective of ability in receiving emotional information (Goldman & Sripada, 2005), and there is a large literature examining the issue of emotion recognition in psychopathic individuals. Blair et al. (2006) identified two major views regarding psychopaths' perception of emotion. The first position maintains that psychopaths do not experience emotion as the rest of the population does,

and thus are likely impaired at identifying emotion in others (Lorenz & Newman, 2002; Patrick et al., 1994; Williamson, Harpur, & Hare, 1991). The second view holds that experience of emotion is distinct from perception, and that findings highlighting lack of physiological, neurological, or emotional response in the psychopath are tapping into dysfunction in word processing or abstraction (Blair et al., 2006; Day & Wong, 1996; Hare & Jutai, 1988; Kiehl, 2004).

The view that psychopaths are deficient at perceiving emotion likely grew from Cleckley's (1941) assertion that psychopaths know of emotion, but do not experience it fully. Following this reasoning, Johns and Quay (1962) claimed psychopaths "know the words not the music", which was bolstered by definitions of psychopathy which included distinct affective deficits. A body of research focusing on the physiological responses of psychopaths to emotional stimuli grew. For instance, Lykken (1957) and Hare (1978) found that psychopaths showed lower skin conductance levels when exposed to anxiety- or punishment based stimuli, than did non-psychopathic groups. Patrick, Bradley, and Lang (1993) also found that aversive stimuli did not provoke the intensity of startle response normally elicited from controls, while Herpertz et al. (2001) found similar results in response to fear, threat, and sympathy stimuli. Additionally, the researchers found a lack of inhibition in responding to appetitive cues. While this lack of physiological response may contribute to psychopaths' relative fearlessness (Raine, 1993; Sass, 1987), lack of empathy, and predatory behaviour via lack of appetitive inhibition, it does not address their perception of either emotion or vulnerability.

Blair, Jones, Clark, and Smith (1997) investigated the psychopaths' physiological responses to distress stimuli while developing Blair's Violence Inhibition Model (VIM; Blair, et al., 1995) that suggests that non-psychopathic populations perceive distress cues in submissive

individuals, and experience uncomfortable arousal as a result of these cues, which in turn prompts the victimizer to stop. Blair and colleagues (1997) posit that psychopaths perceive these same distress cues, yet are not as aroused by them, and therefore do not stop victimizing. He recorded lower skin conductance readings from psychopathic participants in response to facial images of upset adults and children versus control populations, a finding which supports his VIM model. It is important to note, however, that psychopaths were not completely indifferent to the distress, but experienced muted responses to neutral and threatening stimuli. As a result, we conclude that psychopaths must be perceiving distress because they are reacting, and that the lowered physiological response reflects a deficit in emotional response to distress and not a deficit in distress perception. This deficit of response is to be expected as lack of empathy is a hallmark of psychopathy (Hare, 1993).

While some may confuse psychopaths' lack of emotional reaction with a deficit in emotional perception, Blair et al. (2006) suggest many researchers are tapping into a possible word processing deficit within this clinical population. In support of this hypothesis, Patrick, Cuthbert, and Lang (1994) recorded heart rate and skin conductance while psychopaths memorized and recalled fearful and neutral sentences. Participants were subsequently asked to imagine feeling those emotions. The researchers found that psychopaths had less difference in heart rate and skin conductance between neutral and fearful sentences than non-psychopaths, and even less difference between the neutral and fearful imagery. Because the experimental design utilized words as stimuli, it is unknown whether similar results would have been obtained by using pictorial stimuli. Additionally, because lack of fear is a characteristic of psychopathy (Herpertz et al., 2001), the authors are requiring their psychopathic participants to exercise an ability that is already known to be deficient in this population. Therefore, deficient responses are

unsurprising. This criticism also applies to Williamson, Harpur, and Hare's (1991) finding of lower event-related potentials (ERPs) in psychopaths in response to emotional words, and similar reaction times to emotional and neutral words (where comparison participants reacted faster to emotional words), and Lorenz and Newman's (2002) finding that psychopaths were slower than controls at identifying emotionally positive, negative, and neutral words from non-words, but only when the right hand was used. Obviously, slower perception does not denote a qualitative or quantitative difference in perception.

Alternatively, psychopaths may be displaying a deficit in processing abstract concepts possibly limited to specific neurological areas (Blair et al., 2006). For instance, Kiehl, Hare, McDonald, and Brink (1999) found that psychopaths were not as able to distinguish abstract words from concrete ones as were non-psychopaths, and that their ERPs weren't producing different patterns to each category of words, as were the ERPs of non-clinical comparison participants. More specifically, Kiehl et al.(2004) found that psychopaths were not producing as intense a response in the right anterior temporal gyrus to abstract words as controls, who show greater neural activation to abstract words than normal activation. Hare and Jutai (1988) also found deficits in abstraction when psychopaths attempted to differentiate abstract and neutral words, but only when the stimuli was presented to the right visual field.

Day and Wong (1996) investigated both word processing and the right visual field (left hemisphere) in psychopaths by bilaterally presenting neutral and emotional words and faces, then assessing their accuracy and reaction time in identifying which side contained the emotional stimuli. Contrasting Hare and Jutai's (1988) conclusions, psychopaths did not show right visual field (left hemisphere) deficits, but did fail to show the left visual field (right hemisphere) advantage controls demonstrated in terms of reaction time and accuracy. This difference was

demonstrated only with word, and not facial, stimuli. That is, psychopaths displayed the controls' right hemisphere advantage when distinguishing between neutral and emotional faces. This supports the hypothesis of some kind of right hemisphere anomaly in psychopaths, in that psychopaths interpret emotional faces differently from nonpsychopaths, seeming to process them in a detached, denotative fashion. While there is still debate regarding which specific neurological areas and task are affected, interpreting emotional, non-linguistic stimuli seems to be intact in psychopaths, though they do so in a unique way compared to controls. Psychopaths may display neurological differences, but there does not seem to be a deficit in emotional perception in this population, per se.

The idea that emotional perception is intact in psychopaths is reinforced by research into theory of mind, or the ability to accurately assess what another is feeling or thinking (ToM; Premack & Woodruff, 1978). Richell et al. (2003) found that psychopaths were able to tell emotions from photos of human eye regions as accurately as non-psychopaths, and while Habel, Kuehn, Salloum, Devos, and Schneider (2002) found that psychopaths were significantly less accurate at identifying emotions displayed in faces, there was a significant positive correlation between the personality aspects of psychopathy (Factor 1) and accuracy in identifying emotion.

While psychopathy is noted for its lack of empathy (Blair et al., 1995), recent research seems to differentiate between two different types of empathy, which is a close correlate of Theory of Mind (Kaland et al, 2002). Cognitive empathy is often conceptualized as the ability to accurately discern what another believes or thinks, while affective empathy is the ability to discern what another feels. Shamay-Tsoory, Harari, Aharon-Peretz, and Levkovitz (2010) investigated differences in psychopaths' (N = 17) affective and cognitive empathy by comparing their accuracy to those of controls, those with orbitofrontal cortex (OFC) brain lesions (N = 8),

and those with non-OFC brain lesions (N = 9). Participants were shown drawings in the middle of a computer screen depicting a character's face, with 4 similar objects in each of the four corners of the screen (for some tasks, these objects were paired with another cartoon face). Participants were to use the sentence prompt at the top of the screen and features of the character's face to correctly select one of the four objects displayed. These exercises assessed first- and second order skill in cognitive and affective empathy, and as a control, assessed physical observations about the character. First order affective tasks would ask which object the character (Yani) loved, for instance, while second order affective tasks would ask which object Yani loved that another character did not love (pg. 672). In other words, first order affective tasks asked the participant to infer what the main character was feeling, while second order affective tasks asked the participant to infer what the main character believes another character is feeling. During the study, participants' empathy was assessed using the Interpersonal Reactivity Index (Davis, 1983). Results of the study indicated that both psychopaths and those with OFC lesions showed a similar pattern of intact cognitive empathy and observation skills, but reduced accuracy in second order affective empathy. Interestingly, however, first order affective empathy scores did not vary by group membership.

Another recent study highlighted the developmental trajectory of this deficit, as well as gender patterns. Dadds et al. (2009) obtained ratings of empathy from the primary caregivers of 2760 children aged three through thirteen via the Griffith Empathy Measure (Dadds et al., 2008), which defined cognitive empathy as understanding others' emotions, and affective empathy as having 'congruent emotional reactions' (p. 600). Callous/unemotional traits and antisocial behaviour were assessed via the Antisocial Screening Device (Frick & Hare, 2002) and the Strengths and Difficulties Questionnaire (Goodman, 1997). Without taking age into account,

male psychopathy was negatively correlated with both cognitive ($r = -.41, p < .001$) and affective empathy ($r = -.17, p < .001$), while female psychopathy was negatively correlated with cognitive ($r = -.39, p < .001$), but not affective ($r = -.02, p = .38$) empathy. There was no main effect of age on affective empathy. Put another way, girls high on psychopathy displayed consistently normal levels of affective empathy across the age range, while boys displayed low levels of affective empathy across the age range.

However, a gender-dependant pattern for the development of cognitive empathy emerged when interactions were analyzed. Very young boys and girls who scored high on psychopathic traits scored low on cognitive empathy. Yet older boys who scored high on psychopathic traits (9-12 yrs) seemed to score similarly to normal controls on the measure, while older girls with these traits (9-12 yrs) displayed a deficit. That is, younger male and female children who scored high on psychopathic traits seem to display the same lack of cognitive empathy, but boys alone recover the ability as they age.

These studies seem to reinforce the idea that psychopaths are able to identify the emotions of others, but not react to them in the way that non-psychopaths would. Dadds et al. (2009) defined the deficiency of those scoring high on psychopathy as a failure to experience 'congruent emotional reactions' (p. 600) as those they observe, and Shamay-Tsoory et al. (2010) found no deficiency in psychopaths' ability to identify what a cartoon character was thinking or feeling. Therefore, it is logical that psychopaths would be able to 'empathize' and identify feelings of vulnerability in others.

Further supporting this assertion, Book, Quinsey, and Langford (2007) investigated the perception of real-life facial expressions. As part of the study methodology, incarcerated and community participants viewed faces showing basic emotions, as well as neutral faces, and were

asked to identify the emotion and its intensity. Analysis revealed that those with higher psychopathy scores were more accurate at rating emotional intensity.

Psychopathy and Judging Vulnerability in Others

While the emotion deficit debate is not yet concluded, it seems that in some contexts, psychopathic individuals are able to identify the emotions and intentions of others (Book et al., 2007; Lorenz & Newman, 2002; Richell et al., 2003). To be successful as social predators, they would also need to be able to accurately pick out victims on the basis of vulnerable emotional state, as evidenced by body language cues. Two studies have examined this idea directly. First, Book, Quinsey, and Langford's (2007) study also investigated psychopathic inmates' ability to perceive vulnerability. Inmates and community groups were administered Levenson's Self-Report Psychopathy Scale (Levenson, Kiehl, & Fitzpatrick, 1995), and assessed for intelligence. Rater participants then viewed videos of dyadic conversations. The target participants in these videos had filled out a measure of assertiveness, and after viewing the videos, the rater participants were asked to fill out the same measure for the target participant in the video.

Analyses revealed that inmates with higher psychopathy scores were more accurate at rating vulnerability. As with Habel et al.'s (2002) findings, higher levels of Factor 1 were associated with greater accuracy, while this relationship with the behavioural aspects of psychopathy (Factor 2) was weaker. This reinforces the argument that psychopaths are not impaired at perceiving emotion or vulnerability, but may be *more* proficient than controls. Due to the support for psychopaths' different, yet not deficient, perception of emotion, Book et al. (2007) coined a new term called "callous empathy". This characteristic describes the psychopaths' ability to identify the emotions of others, while not responding affectively to them, and instead using this information to benefit themselves.

In a second study examining the ability of individuals scoring high on psychopathic traits to accurately pick out victims, Wheeler, Book, and Costello (2009) found that higher levels of psychopathic traits were significantly associated with greater accuracy in identifying participants who have been victimized in the past. This relationship was strongest for Factor 1 (affective and interpersonal symptoms of psychopathy). Stimuli were collected by videotaping 12 male and female undergraduates walking down an indoor hallway, and identifying 6 of these as victims. The stimuli were then shown to 47 male undergraduates who rated the vulnerability of the 12 targets in the video on a 1-10 scale, and then completed the SRP. Accuracy in choosing victims was positively correlated with overall psychopathy scores, as well as Factor 1 and its subscales (Callous Affect, Interpersonal Manipulation), and Antisocial Behavior (one of the subscales for Factor 2).

There were 2 major limitations to Wheeler et al.'s (2009) study that were addressed by the present study. First, in Wheeler et al.'s (2009) study, target participants' self- ratings were yes/no, and no specific information was requested regarding victimizations. Therefore, we decided to remedy this issue by asking for a self-rating of vulnerability (0 to 10), as well as having target participants give information on specific victimization history. Further, in the previous research, target participants were filmed in self-chosen clothing and shoes that may have impacted the findings. Research by Gunns et al. (2002) found that particular types of footwear (high heels, flat, or bare feet) and clothing (tight skirt, lycra suit, and pants) can affect vulnerability ratings. Therefore, in the present study, we asked target participants to wear similar pants and shoes (flat), while providing them with identical shirts. We predicted that the findings from Wheeler et al.'s (2009) study would be replicated in that individuals scoring higher on

psychopathy would be more accurate in picking out vulnerable individuals, and that this relationship would be stronger for Factor 1.

Body Movement Components and the Perception of Vulnerability

While it would be interesting to find that individuals scoring high on psychopathic traits are more accurate in judging vulnerability to victimization, this would not inform us as to which body movements are most salient in making vulnerability judgments. In previous research (e.g. Grayson & Stein, 1981) certain body movements have been found to be important in these ratings, including abnormal stride length and width, and synchrony of movement. However, these movements have not been viewed in isolation, and no one has examined this issue in relation to psychopathic traits. Therefore, in the present study, we attempted to isolate these movements into separate videos, and predicted that length of stride and synchrony would receive the highest ratings of vulnerability, as suggested by Murzynski and Degelman (1996). Further, we examined whether the ratings given to the isolated movements were different depending upon the rater participants' psychopathic tendencies.

Purposes of the Present Research

Given the scope of the literature previously discussed, it is wise to review our predictions and the research directly related to them. These hypotheses are grouped in the same manner as their foundational research, into three distinct purposes.

Purpose 1: The Relationship Between Body Language and Vulnerability

The first objective in the present study was to examine the relationship between body language and vulnerability. I predict that self-perceived vulnerability will be significantly correlated with body language cues, while past victimization may or may not be.

Purpose 2: The Relationship Between Psychopathy and Accuracy in Judging Vulnerability

I predict that higher psychopathy scores will be related to accuracy in selecting vulnerable individuals, and that this relationship would be stronger for Factor 1 of psychopathy.

Purpose 3: Salience of Body Movement Components in the Perception of Vulnerability

I predict that videos of isolated movements would receive the highest ratings of vulnerability. I will also perform exploratory analyses to discover whether rater participants higher in psychopathy provide different ratings for the body movement component videos than rater participants lower in psychopathy.

Study 1

Participants

Twenty-five female undergraduate students were recruited to participate in the present study. They were filmed surreptitiously (see procedure) and were then asked for consent to use their video as stimuli. Twenty-four of these participants agreed to have their videos used. In the end, though, only twelve of the videos were deemed to be appropriate as body language stimuli (e.g. the targets were not carrying anything, the video was acceptable quality). While age information was not collected for the participants, recruitment materials specified that participants had to be women between the ages of 18 and 30.

Materials

Victimizations.

Types of victimization were assessed using a Life Events Inventory compiled for this study. It included life events commonly seen as both positive (ex. new child, graduation, bought a home) and negative (e.g. life-threatening illness, unemployment, natural disaster), as well as events of interest (e.g. mugged, stalked, cheated). Target participants indicated the frequency of each event, then events were categorized as listed in Table 2. That is, each event was coded

three times as either a psychological or nonpsychological event, a violent or nonviolent event, and a sexual or nonsexual event. The total number of reported victimizations was also recorded.

Table 2

Categorization of Victimization Events

Categorization of Victimization	Type of Victimization
Psychological	stalked, conned, emotionally abused, or threatened.
Nonpsychological	mugged, bullied, sexually assaulted, sexually abused, physically abused, robbed, and neglected in childhood
Sexual	sexually assaulted and sexually abused
Nonsexual	mugged, stalked, bullied, physically abused, robbed, conned, emotionally abused, threatened, and neglected as a child
Violent	mugged, sexual assaulted, sexually abused, physically abused
Nonviolent	stalked, bullied, robbed, conned, emotionally abused, threatened, and neglected in childhood

Self-Ratings of Vulnerability.

In order to obtain a measure of self-perceived vulnerability, participants were asked "Overall, how vulnerable to victimization do you feel? (0-10, 0 = not vulnerable at all, 10 = very vulnerable)".

Procedure

The psychology participant pool listing advised potential participants that the study examined how self-concept related to life events. It also advised those interested that they would be photographed, asked to fill out a questionnaire, and rate their self-concept.

Target participants arrived at Room A in jeans and flat shoes, with head and neck visible. The rationale given for these requirements was that photos would be taken of the target participants. Upon arrival in Room A, all target participants signed a consent form, were provided with identical shirts, and asked to select a size to wear, from small to extra large. The target participant was then asked to walk to Room B to be photographed. Unbeknownst to them, while walking from Room A to B, female target participants were filmed unobtrusively by a videocamera hidden within a cardboard box which was placed on a wheeled cart. The hallway joining Room A and B is approximately 50 feet long, 10 feet wide, and is located in a well-lit and relatively familiar section of the university.

Upon arriving in Room B, target participants filled out a Life Events Inventory. They were also asked to rate how vulnerable to victimization they felt overall, using a 0-10 rating scale. After filling out the form, the target participant was debriefed, asked for permission to use the video of their gait, and compensated.

Videos of target participants were excluded if there was less than five seconds of gait visible, if individuals other than the target participant were present in the hallway during

recording, or if target participants were adjusting clothing or hair for the majority of the recording time. Conversely, videos were included in the study if they could be edited to yield between 6-10 seconds of uninterrupted gait, if the target was alone in the hallway, and if limbs seemed to be free to swing. In particular, while we would not include videos of target participants who used their arms to adjust clothing etc, we would include videos of target participants who held their arms together.

Results

Two researchers individually and then jointly coded the target participant videos according to nineteen body language vulnerability cues provided by Grayson and Stein (1981). If the target participant showed vulnerable movement in any of the 19 body language cues, they received a score of 1 on that movement. If the target participant did not show vulnerable movement in any of the 19 body language cues, they received a score of 0 on that movement. The scores were then summed such that higher scores reflected greater vulnerability, with a score of 19 representing maximum vulnerability, and a score of 0 representing minimum vulnerability. Intraclass correlation was .90 before consultation with the other researcher. Rating paradigms were amended until rating agreement was reached. Descriptive statistics for pertinent variables are provided in Table 3.

Table 3

Descriptive Statistics of Target Variables: Body Language and Vulnerability

Variable	%	*Minimum*	*Maximum*	*M*	*SD*	Skewness	Kurtosis
Vulnerable Body Movements	N/A	28	37	33	2.95	-.0.25	-1.10

Self-rated Vulnerability	N/A	0	8	4.17	2.55	.05	-0.76
Number of Victimizations Reported							
Psychological	67	0	7	2.17	2.48	1.06	-.21
Nonpsychological	67	0	11	3.50	3.42	.77	.40
Violent	42	0	4	1.25	1.76	.98	-.96
Nonviolent	92	0	16	4.42	4.72	1.61	2.30
Sexual	25	0	4	.67	1.37	2	2.88
Nonsexual	92	0	16	5	5.33	1.20	.06
Total	92	0	16	5.67	5.23	.87	-.47

Note. % represents the percentage of 12 target participants endorsing each category.

To determine whether Grayson and Stein's (1981) body cues are indeed indicative of vulnerability, total number of vulnerable target participant movements was correlated with self-ratings of vulnerability provided by the target participants and with the various types of victimizations experienced by all targets. Correlations of vulnerable body movements with self-rated vulnerability and victimization are given in Table 4. The correlations between total number of vulnerable target participant movements and the number of each type of victimizations experienced by target participants were non-significant. Interestingly, the correlation for the number of sexual victimizations reported by target participants approached significance, $r\,(10) = .36, p = .13$, one-tailed. As well the positive correlation between total number of vulnerable

target participants' movements and self-ratings of vulnerability approached significance, r (10) = .45, p = .07, one-tailed.

Table 4

Correlations Between Victimizations and Self-Ratings, and Victimizations and Body Movements

Variable	Self-Ratings of Vulnerability			Body Movements		
Victimizations reported	*n*	*r*	*p*	*n*	*r*	*p*
Psychological	12	-.16	.31	12	-.19	.27
Nonpsychological	12	-.10	.37	12	.27	.20
Violent	12	.11	.37	12	.19	.28
Nonviolent	12	-.20	.26	12	.02	.47
Sexual	12	.07	.42	12	.36	.13
Nonsexual	12	-.16	.31	12	-.01	.49
Total	12	-.15	.33	12	.08	.40

Note. All p values are 1-tailed.

Study 2

Participants

Seventy male students from Brock University were recruited to view the twelve video stimuli. In a previous study examining the issue of psychopathy and accuracy in victim selection(Wheeler et al., 2009), information on age and socioeconomic status was collected and did not have an impact on the results. Thus, we decided to omit demographic questions in the present study. While age information was not recorded, recruitment materials asked for men between the ages of 18 and 35.

Materials

Target Participant Videos.

Video stimuli collected during Study 1 were presented to participants in Study 2.

Body Language Component Videos.

In order to isolate each of the body language cues associated with vulnerability from previous research (e.g. Grayson & Stein, 1981), we filmed a 5'4 confederate female in jeans, a long-sleeved black shirt, and flat shoes portraying individual components of the prototypical "victim walk". No other individuals were included in the videos. Each body movement component was filmed separately. These components included stride length, stride width, synchrony, amount of knee bend, amount of energy displayed, and head movement, as well as a baseline video of the model's natural walk.

Psychopathic traits.

To assess psychopathic traits, we used the Self-Report Psychopathy Scale (Paulhus, Hemphill, & Hare, in press) which measures two subscales of psychopathy: Factor 1, the personality-based features of psychopathy, and Factor 2, the lifestyle-based features of pychopathy. These two factors are further broken down into four subscales of psychopathy. Interpersonal Manipulation ($\alpha = .76$) and Callous Affect ($\alpha = .74$) subscales fall under Factor 1 (Williams, Nathanson, & Paulhaus, 2003), which measures emotional shallowness, failure to accept responsibility for one's actions, callousness and lack of empathy, manipulation and cunning, lack of remorse or guilt, a grandiose sense of self-worth, pathological lying, and glibness or superficial charm. Erratic Lifestyle ($\alpha = .67$) and Antisocial Behaviour ($\alpha = .91$) subscales fall under Factor 2 (Williams, et al., 2003), which measures parasitic lifestyle, irresponsibility, juvenile delinquiency and early behaviour problems, poor adult behavioural

controls, lack of realistic long-term goals, promiscuous sexual behaviours, a need for stimulation and proneness to boredom, and impulsiveness. This measure demonstrates good overall reliability ($\alpha = .88$; Paulhus et al., in press) and construct validity with various personality and antisocial measures (Williams et al., 2003).

Accuracy of Vulnerability.

In order to assess how vulnerable each target participant was perceived to be, a 10-point rating scale was created, with 0 indicating not at all vulnerable, and 10 indicating completely vulnerable. Rater participants received the following directions: "After watching the following videos, I want you to determine whether this person is a victim or not, and rate how vulnerable they appear using a 0-10 scale, 0 being not at all vulnerable-looking, and 10 being very vulnerable-looking. " Prior to viewing the body language component videos, rater participants were asked, "As with the previous videos, please rate vulnerability with a 0-10 scale, but you do not need to judge whether the person is a victim or not."

To calculate discrepancy ratings, we subtracted the target participants' self-ratings of vulnerability from the rater participants' ratings of the vulnerability. Valence of the discrepancy was removed, resulting in an absolute discrepancy rating which was averaged for each rater participant over their 12 video ratings. The larger the resulting value, the less accurate the participant's rating was. This accuracy measure was intended to determine how *close* the raters' evaluations were to the self-ratings of the targets.

Body Language Component ratings.

Rater participants viewed the 7 randomized body language component videos in which a female portrayed vulnerable stride length, stride width, synchrony, amount of knee bend, amount of energy displayed, and head movement, as well the model's natural walk. After viewing each

video, they rated the vulnerability represented in each component video on a 0 -10 scale (0 meaning not at all vulnerable, and 10 meaning completely vulnerable).

Procedure

Rater participants were run in groups of up to five. First, each of the 12 videos were projected in random order onto a blank wall in the experimental room, and each group asked to rate the vulnerability portrayed by each target and make a dichotomous decision of whether the target was a victim. Ample time was provided in between each video for rater participants to record their 0-10 judgement (0 being not at all vulnerable-looking) on how vulnerable each target participant appeared, (and to record whatever factors they used to decide on the level of vulnerability displayed). Each subsequent video was displayed after all rater participants were finished recording responses.

Second, rater participants viewed the 7 randomized body language component videos. After viewing each video, they rated the vulnerability represented in each component video (and recorded any cues they used to gauge the vulnerability they perceived). Finally, they filled out the Self-Report Psychopathy Scale (SRP-III, Paulhus, et al., in press).

Results

The second hypothesis was that psychopathy would be positively correlated with accuracy in vulnerability judgments. Descriptive statistics for relevant variables are provided in Table 5. No problems with normality were detected, so raw variables were used in the analysis. In order to ascertain how close rater participants' estimates were to target participants' self-ratings, the target participants' self-rated vulnerability was subtracted from rater participants' ratings of target vulnerability. Absolute discrepancy scores were averaged over the 12 videos, resulting in a discrepancy from actual vulnerability. It was expected that psychopathy would

relate negatively to this value (meaning that individuals higher on psychopathy would be less discrepant, or more accurate, in their ratings of vulnerability).

Table 5

Descriptive Statistics of Psychopathy and Accuracy Variables

Variable	*n*	*M*	*SD*	Z-Skewness	Z-Kurtosis
Discrepancy Scores	66	2.72	.52	1.27	.06
Psychopathy					
Factor 1	68	90.57	12.79	.27	.09
Callous Affect	68	44.96	5.96	.97	1.26
Interpersonal	68	45.62	8.78	.83	.25
Manipulation					
Factor 2	68	77.77	14.29	.94	.09
Erratic Lifestyle	68	49.43	8.21	-1.04	-.09
Antisocial Behaviour	68	28.35	8.70	2.83	-.18
Total	68	168.35	22.63	1.46	.83

Discrepancy scores were correlated with total SRP, Factor 1, Factor 2, Interpersonal Manipulation, Callous Affect, Erratic Lifestyle, and Antisocial Behaviour, where lower discrepancy scores indicate greater accuracy, and where higher psychopathy scores indicate a greater degree of psychopathy. There were no significant relationships between discrepancy scores and Factor 1 (r (63) = -.08, p = .54) or its subscales (Interpersonal Manipulation, r (63) = -.07, p = .58) Callous Affect (r (63) = -.06, p = .62). However, correlations were significant between discrepancy scores and Factor 2 (r (63) = -.39, p = .001) and both of its subscales (Erratic Lifestyle (r (63) = -.33, p = .008), and Antisocial Behaviour (r (63) = -.34, p = .005).

Total SRP score was also significantly related to discrepancy scores (r (63) = -.29, p = .02). These negative correlations indicate that greater degrees of psychopathic traits are related to greater degrees of accuracy.

To remove error resulting from individual differences in overall ratings, a correlation between each participant's ratings and the targets' self-ratings of vulnerability was also computed. These correlations became data points indicating the relative accuracy of each participant in judging vulnerability (e.g. a higher correlation indicates that there was a greater agreement between the participant rating and target rating of vulnerability). This accuracy measure was then correlated with each of the measures of psychopathy.

As found with the other accuracy measure, Factor 2 was significantly positively correlated with accuracy (r (62) = .21, p = .05). Further, the relationship between both subscales of Factor 2 and the accuracy measure approached significance (r (62) = .18, p = .08, for both Erratic Lifestyle and Antisocial Behaviour). Total SRP was not significantly correlated with accuracy, unlike the findings with the other accuracy measure (r (62) = .11, p > .05). Factor 1 was not significantly related to accuracy (r (62) = -.04, p > .05), nor was Interpersonal Manipulation (r (62) = .05, p > .05), or Callous Affect, (r (62) = - .15, p > .05).

The final purpose of the present study was to determine which body movements were most salient in rating the vulnerability of the model in the body movement component videos, and whether ratings differed depending on rater participants' levels of psychopathic traits. Descriptive statistics for relevant variables of the body movement component videos are provided in Table 6. Distributions of all variables exhibited normality and raw scores were used in all analyses.

Table 6

Descriptive Statistics and Pairwise Comparisons of Vulnerability Ratings for Body Language Component Videos

Variable	*n*	*M*	*SD*	Z-Skewness	Z-Kurtosis
Body Language Component					
Videos					
Low energy	66	6.56[a]	2.20	-2.97	.25
Stiff neck	66	3.45[c]	1.72	.59	.33
Short Stride	66	3.95[b]	2.11	1.52	-1.53
Stiff Knees	66	4.15[b]	1.88	.23	-1.14
Wide Stride	66	5.42	2.05	-.27	-1.48
Asynchronous movement	66	6.12[a]	2.34	-2.11	-.45
Natural Walk	66	3.26[c]	1.94	1.02	-.96

Note. Means with the same letter as their superscript do not differ at the .05 level.

In order to determine which body movements were most important in people's ratings of vulnerability, we used the participant ratings given to the body language component videos (displaying each of the individual body movements associated with vulnerability) as a within-subject dependant variable which was subsequently subjected to a repeated measures analysis. We chose to analyze the data in this manner as we wished to assess the differences in vulnerability ratings as a function of body language component video watched, but the assumption of independence required for simple analysis of variance would not be met due to the correlation between the vulnerability ratings. However, we also wanted to determine whether psychopathy would influence their ratings, so in order to examine this, three equal groupings were created based on SRP total, F1, and F2 scores. This resulted in low, medium and high

groups for each of the psychopathy variables, which became our between between-subjects independent variable So, in sum, we performed a repeated measures ANOVA, with the body language component videos serving as our independent variable, and with vulnerability ratings and psychopathy groupings serving as our within-subject dependent variable and between subjects dependent variable, respectively.

First, rater participant scores were divided into 3 equal groups based on SRP total scores (low, medium and high) and then a repeated measures analysis of variance was conducted. The assumption of equality of variance (F (56, 10683) = .95, p = .58) was met, but the sphericity assumption was not (χ^2 = 50.84, p = <.001), therefore, the Greenhouse-Geisser corrected value was employed. Cook's distances were acceptable, indicating a lack of multivariate outliers. There was a main effect for body language component video within each psychopathy group (F (4.6) = 47.58, p = < .001), but no significant difference between the three psychopathy groups (F (2) = 1.29, p = .28), averaged across all component videos. Neither was there a significant interaction between component and psychopathy groups (F (9.3) = .79, p = .63). Low energy and asynchrony were equally judged to be the most vulnerable-looking, followed by a wide stride. Having a short stride and stiff knees were equally judged to be the third most vulnerable movements, while neck stiffness and the model's natural walk were equally judged as the least vulnerable, on average (see Table 6).

Second, rater participant scores were divided into 3 equal groups based on Factor 1 psychopathy scores (low, medium and high) and then a profile analysis performed. The assumption of equality of variance (F (56, 10937) = .92, p = .64) was met, but the sphericity assumption for component was not (χ^2 = 51.38, p = <.001) so the Greenhouse-Geisser corrected value was used. Cook's distances were acceptable, indicating a lack of multivariate outliers.

There was a main effect for component video within each psychopathy group (F (4.6) = 47.32, p = <.001), but no significant difference between the three Factor 1 psychopathy groups, averaged across all component videos (F (2) = .03, p = .97). Neither was there a significant interaction between component and Factor 1 psychopathy groups (F (9.3) = .60, p = .80).

Third, rater participant scores were divided into 3 equal groups based on Factor 2 psychopathy scores (low, medium and high) and then a profile analysis performed. The assumption of equality of variance was met (F (56, 10683) = 1.09, p = .30), but the sphericity assumption for component was not (χ^2 = 49.12, p = <.001) so the Greenhouse-Geisser corrected value was used. Cook's distances were acceptable, indicating a lack of multivariate outliers. There was a main effect for component video within each psychopathy group (F (4.7) = 46.42, p = .001), but no significant difference between the three psychopathy groups, averaged across all component videos (F (2) = 1.96, p = .15). Neither was there a significant interaction between component and Factor 2 psychopathy groups (F (9.4) = .39, p = .94).

Upon examination of the profile plots however, we discovered that the high Factor 2 group appeared to differ from the low Factor 2 group, so we performed a profile analysis with only those two groups. This extreme groups comparison has been used in other studies examining psychopathy (Gretton, Hare, Catchpole, 2004; Walters et al., 2007). The assumption of equality of variance was met (F (28, 6414) = 1.07, p = .37) but the sphericity assumption was not (χ^2 = 49.99, p = <.001) so the Greenhouse-Geisser corrected value was used. Cook's distances were again acceptable, indicating a lack of multivariate outliers. There was a main effect for group that approached significance (F (1, 43) = 3.46, p = .07) with high SRP scorers giving lower vulnerability ratings (M = 4.44) than low SRP scorers (M = 5.17) for all of the components.

Discussion

Body Language and Vulnerability

The first prediction in the present study was that self-perception of vulnerability would have a larger impact on body language than actual victimization history would. While the correlation between self-rating of vulnerability and body language cues was stronger than for specific victimizations, there was not sufficient power to determine whether a) the correlations were significant, and b) the correlations were different from one another. Descriptively, though, the correlation between self-rated vulnerability and number of body language cues indicating vulnerability was large. Further, the correlations between number of sexual victimizations and body language was of a medium size. While the idea that self-perception may be more important when examining body language is fascinating and compelling, future research would need to be conducted on a much larger sample in order to make definitive conclusions.

That being said, the finding, while not necessarily robust, is consistent with previous research which has shown that body language does indeed reflect self-concept. For instance, Richards et al. (1991) found that body language observed during targets' conversation was indicative of submission. Montepare and Zebrowitz-McArthur (1988) found that body language could evoke a sense of powerfulness or vulnerability, while Book et al. (2007) showed that rater participants could estimate target participants' self-rated assertiveness by observing dyadic conversation.

Other studies have linked body language to others' perception of target vulnerability, yet these participant ratings were not grounded in subjective measurement of target participants' self-concept or in objective measurement of past victimization. For instance, Murzynski and Degelman (1996) found that targets in video clips portraying sets of typical vulnerable body

movements were indeed rated as more vulnerable to sexual assault. Yet as these sets of typical vulnerable body movements were essentially prototypes and not actual gaits of real targets, rater participant ratings could not be compared with target participants' past or present self-concept. Grayson and Stein (1981) also found that other-ratings of vulnerability were linked with body movement. However, while they had recorded actual gaits of real targets, their study design did not include a comparison of ratings with target demographics either. The same type of design was employed by Gunns et al. (2002) and Johnston et al. (2004). That is, these researchers investigated the type of body language linked to others' perception of vulnerability versus body language linked to self-concept or actual victimization.

Wheeler et al. (2009) attempted to merge these studies by gathering target participant data regarding whether they had been victimized and the number of times they had been victimized, while also gathering rater participant ratings of vulnerability and researcher scores of body movement. This study is unique in that we investigated the links between a subjective target measure of self-rated vulnerability, an objective measure of type and number of past target victimization, other-rated vulnerability of the target, and body language cues in one investigation. There already existed a theoretical basis in the literature linking self-identification as a victim with severity of victimization (Baumer, 2002; Greenberg & Beach, 2004; Theriot et al., 2005), implying that target participants' self-rated sense of vulnerability could be a proxy for an objective measure of past victimization. However, we extended that hypothesis by positing that self-rated vulnerability would be *more* important than past victimization regarding other-perceived vulnerability via body cues, while recognizing that the small sample size would limit our confidence in results.

The hypothesis that movement cues reflect self-rated vulnerability more than actual number of past victimizations is also in line with previous research (Johnson, et al., 2004) that noted a marked decrease in vulnerable movement cues when participants merely imagined walking in an unsafe environment. This study provides partial confirmation that perceived vulnerability is influenced by subjective, and perhaps variable, self-perception. It may be that past victimizations contribute to a heightened sense of vulnerability, which in turn translates into body language. Further research may perform path analyses to discover the directionality and influence of the various factors.

Another facet to this hypothesis may be found in previous research linking fear of crime and increased probability of becoming a victim. Jackson and Stafford (2009) found that fear of crime leads to poor physical and mental health, while Logan, Walker, Jordan, and Leukefeld (2006) found that physical and mental issues increased risk of rape. As a sense of vulnerability is synonymous with fear of crime, there may to be a pathway whereby past victimization produces self-perceived vulnerability, leading to poor physical and mental health, which in turn affects physical attributes like gait, increasing susceptibility to crime. Taken as a whole, this research provides hope to the previously victimized, that their past may not necessarily signal vulnerability to future predators. If targets' vulnerability cues actually originate in self-concept, and self-concept can be altered, then perceived vulnerability may also be altered, unlike previous victimization. Again, given our very small sample, we are not able to make a definitive conclusion, but we intend to continue to examine this issue in the future.

If our results hold up in a larger sample, cognitive behavioural therapy (CBT) may provide a way of improving these self-perceptions, and could be as effective as body language training. As Johnson et al. (2004) discovered that untrained victims could convey invulnerability

simply by imagining themselves in particular environments, their research suggests that the ability to reduce vulnerable body movements is innate and relatively effortless given the appropriate emotional climate. Changing this emotional climate to one of confidence and not fear could be accomplished with CBT. This approach may have long-lasting effect whereas body language training requires frequent refreshment sessions.

Psychopathy and Victim Selection

We also hypothesized that psychopathy, specifically Factor 1, would be related to rater participants' accuracy of vulnerability judgements, and results partially supported these hypotheses. As in previous research, total psychopathy score was correlated with greater accuracy of rater participants' vulnerability judgments. However, while we expected rater participants' accuracy to be significantly correlated with Factor 1 and its subcategories (as in Wheeler et al., 2009), we found that rater participants' discrepancy scores were significantly correlated with Factor 2 and its subcategories.

The finding that psychopaths can accurately detect vulnerability certainly illuminates psychopaths' victimization of others, their parasitic lifestyle, and their tendency to manipulate (Hare, 1991, 2003). This capacity would also enable greater mobility, key to psychopaths' evolutionary success according to Harpending and Sobus (1987). Psychopaths could change locations more often, as they would not have to spend as much time in the new location detecting vulnerable individuals. Additionally, our findings give greater credence to Frank's (1988) theory that the successful opportunist uses emotion as a cue to the suitability of other potential victims. As psychopathy was linked with accuracy and body language cues were positively correlated with self-rated vulnerability, it appears that psychopaths could be using body language as an emotional cue to select targets that feel the most vulnerable. Future research will be needed to

confirm that those who feel most vulnerable actually are those who eventually are victimized most often.

It has already been established that psychopaths show great skill at deception (Seto et al., 1997), manipulation (Hare, 1993), and taking advantage of others (Mealey, 1995), and this may be partially due to their ability to perceive others' feelings of vulnerability. This possible facility in receiving emotional information coincides with previous research on psychopaths' emotion perception (Blair et al., 1995; Book et al., 2007; Habel et al., 2002; Richell et al., 2003; Wheeler et al., 2009) and on their levels of cognitive and affective empathy (Dadds et al., 2009; Shamay-Tsoory et al., 2010) in that it seems psychopaths possess "callous empathy" (Book, et al., 2007). This characteristic describes the psychopaths' ability to identify the emotions of others, while not responding affectively to them, and instead using this information to benefit themselves. This agreement with previous research asserting psychopaths' ability to perceive emotion in others may be due to the design of the present study which sidestepped the possible word processing deficit suggested by Blair et al. (2006) by using videotaped gaits. The design also avoided inadvertently tapping into psychopaths' possible delay in reaction to emotional words (Williamson et al., 1991) by providing as much time as necessary to respond to stimuli.

Although the findings of the present study generally support the ability of psychopaths to perceive vulnerability, the strong link between accuracy and Factor 2 was surprising given that Wheeler et al. (2009) found a strong link between accuracy and Factor 1. This raises the question of why findings were discrepant between the two studies. We believe it is because of the more uniform appearance of the targets. Experimental protocol for the rater participants was nearly identical to Wheeler et al. (2009), in that rater participants viewed videos of targets walking and rated their vulnerability, then filled out the SRP. Importantly, the only major

differences in method between the present study and Wheeler et al. (2009) were the use of women only as targets versus men and women as targets, and that all targets wore supplied, identical, long-sleeved white shirts along with jeans and flat shoes from their own wardrobe. Using women only may have inflated rater participants' vulnerability ratings overall, yet would not be expected to nullify differential ratings of individual targets. On the contrary, male rater participants would have equal, if not greater, experience judging the vulnerability of individual women as they did individual men.

Consequently, it seems likely that clothing and shoe choice may have a large impact on ratings of vulnerability as had previously been found by Gunns et al. (2002). The researchers manipulated type of footwear between high heels, flat, and bare feet, while also manipulating clothing between tight skirts, lycra suits, and pants. Vulnerability scores varied by type of footwear and clothing. Additionally, it is possible that those higher in Factor 2 are more accurate in detecting vulnerability due to their parasitic lifestyles, and that this enables them to judge potential victims, even given more uniform appearance of targets. Alternatively, target participants may have been cued to surveillance by the request to don uniform clothing, and therefore may have inadvertently muted their body language cues.

Salience of Individual Body Movements in the Perception of Vulnerability

The final purpose of the present study was to explore the relative salience of specific motion cues in making ratings of vulnerability. The full set of cues was used by Grayson and Stein (1981) in their research, and a truncated version of the same was used by Murzynski and Degelman (1996). We found that, in general, rater participants paid most attention to the amount of energy and synchrony displayed by a target, and the width of their stride when making vulnerability judgments. Shortness of stride and stiff knees were also attended to. These

movements are in line with previous research that pinpointed stride and body-limb movements as important in the detection of vulnerability (Grayson & Stein, 1981; Murzynski & Dengelman, 1996).

We also wanted to determine whether the salience of these cues differed depending on the level of psychopathic traits. Individual component videos were not rated equally by participants: while ratings of the body language component videos did not differ significantly according to total SRP score or Factor 1 scores, the difference between scores provided by those low on Factor 2 ($M = 5.17$, $SE = .28$) and those provided by those high on Factor 2 ($M = 4.44$, $SE = .28$) approached significance. As individuals scoring higher in Factor 2 psychopathy also displayed greater accuracy in assessing self-rated vulnerability, these significantly lower body language component scores may reflect a greater accuracy, as well. That is, those with high Factor 2 psychopathy scores may be correctly assessing lower actual vulnerability, while those low on Factor 2 psychopathy may chronically *overestimate* vulnerability. Further research needs to be conducted to examine this possibility.

This possible enhanced accuracy reinforces Frank's (1988) theory that successful predators should be able to detect cues of vulnerability, including body language, in order to assess suitability of potential victims. Our results would imply that this facility exists in contrast to control populations that would either lack the ability to accurately assess vulnerability and, thus, be unable to sustain cheater strategies, or would naturally use cooperator strategies that do not require such ability to detect vulnerability. Taking these results together, we can acknowledge the grave implications of a population of cheaters with the ability to hone in quickly on potential victims who themselves feel particularly vulnerable. However, these results may also be used to build more effective strategies to protect against these predators by

investigating the particular features of clothing that are most vulnerable-looking to those higher in Factor 1 versus those higher in Factor 2 psychopathy, and by targeting self-concept and fear of crime as well as physical tactics in self-defense training.

Future Research

Future research may address sex differences in self-ratings of vulnerability. In the present study, we used all female target participants as stimuli, and the filming of the targets occurred in a familiar hallway of the university they attended. Moore and Shepherd's (2007) research indicated that women were more fearful of personal harm than men, but that there was no gender difference in fear of property crime. Additionally, Brownlow (2004) found that women judge the safety of a place or situation on an individual basis, evaluating primarily according to the risk of rape, whereas men employ a constant, elevated sense of wariness. Consequently, we may have accessed a more stable, personal sense of vulnerability had we also employed men, versus a more transient rating from women that was likely based on the environment they walked in. Additionally, given that the walking space was a familiar environment and that there was likely little perceived chance of personal harm, especially rape, we may have received underestimated self-ratings of vulnerability.

However, our use of women only as targets was decided upon to facilitate rater participant ratings of vulnerability. Women are generally perceived to be more vulnerable by observers, and qualitative information from Wheeler et al. (2009) suggested that vulnerability was attributed to female targets in part because of their gender. Future studies may feature longitudinal designs including both sexes in order to assess the static or dynamic nature of self-rated vulnerability in men and women. Investigation of this kind could also evaluate whether

physical cues reflect vulnerability equally in both genders and whether those same cues are similarly expressed across time.

Additionally, further investigation should incorporate locations foreign to the targets so as to negate feelings of familiarity, and should vary in such a way that awareness of personal or property crime is primed. Clothing should be individually-chosen and the effect of the chosen clothing on ratings of vulnerability should be examined.

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Appendix A

Advertisement for Participants

Advertisement for Participants: Study 1

Study name: *Personality and Life Events Phase I*

Abstract: We invite your participation in a study looking at how self-concept relates to life events, and whether personality influences the ability to judge another's life events.

Description: Should you decide to participate, you will be photographed, asked to fill out a questionnaire indicating which life events you have experienced, how many times each event occurred, and how much impact that event had on your life. You will also be asked to rate your self-concept.

Participation in this study will require 30 minutes of your time, and we offer $20 compensation.

Eligibility: Women 18-30

Restrictions: may not have participated in *Personality and Vulnerability*

Duration: 30 minutes

Researcher: Sarah Wheeler Stephenson (ss04de@brocku.ca); Dr. Angela Book (abook@brocku.ca)

Participant Sign-up Deadline: 24 hours

Participant Cancellation Deadline: not applicable

Study Status:

IRB Approval Code: 09-040

Advertisement for Participants: Study 2

Study name: *Personality and Life Events Phase II*

Abstract: We invite your participation in a study looking at how self-concept relates to life events, and whether personality influences the ability to judge another's life events.

Description: Should you decide to participate, you will be asked to view 12 short video recordings of individuals walking through a hallway. After each video, you will be required to rate how vulnerable you believe each individual would be to victimization using a 0-10 scale, and indicate whether you believe that person has been a victim or has not. Next, you will view a series of 7 videos and be asked to rate the perceived vulnerability of each clip. Finally, you will be asked to fill out a personality questionnaire.

Participation in this study will require a maximum of 1 hour of your time, and we offer $10 compensation. Alternatively, you are able to use participation in this study towards an assignment in Psychology 1F90 (or another course that has given such an assignment). You may not receive *both* financial compensation and course participation.

Eligibility: Males 18-30

Restrictions: may not have participated in *Personality and Vulnerability*

Duration: 60 minutes

Researcher: Sarah Wheeler Stephenson (ss04de@brocku.ca); Dr. Angela Book (abook@brocku.ca)

Participant Sign-up Deadline: 24 hours

Participant Cancellation Deadline: not applicable

Study Status:

IRB Approval Code: 09-040

Appendix B

Information and Consent Forms

Information and Consent Form: Study 1

Information Sheet and Consent Form

This form is intended to give information and invite your participation in a study looking at how self-concept relates to life events, and whether personality influences the ability to judge another's life events. This research is being conducted through the Psychology Department at Brock University by Sarah Wheeler Stephenson, Kimberly Costello, and Natalie Gauthier under the supervision of Dr. Angela Book. The study has been reviewed and received ethical clearance through the Research Ethics Board at Brock University (REB file # 09-040). One of the copies of this form is for our records, and you are asked to keep the other copy for your own records.

Should you decide to participate, you will be photographed and asked to fill out a questionnaire indicating which life events you have experienced, how many times each event occurred, and how much impact that event had on your life. You will also be asked to rate your self-concept.

Participation in this study will require 30 minutes of your time, and we offer $20 compensation.

You are not required to participate, and can withdraw at any point without penalty. Should you choose to withdraw, we will destroy any data that has already been collected. The information that you give will in no way be linked to your name, but will be identified with an arbitrary number. Data will be kept in a locked laboratory, and only individuals involved in the research project will have access to them. The data from this study will be published in the form of journal articles. Should you wish to learn of the results of this study, we would be happy to send you a summary of the findings if you give your contact information to the researcher. Five years following publication of results, the data will be destroyed.

By signing below, you state that you understand that your participation is entirely voluntary:

I have read the above letter of information/consent and freely agree to participate in "Personality and Life Events Phase I". I am aware that I can contact Sarah Wheeler Stephenson (ss04de@brocku.ca) or Dr. Angela Book with any question, concern, or complaint that I have regarding this research. I am also aware that I may contact the Research Ethics Officer (mail to reb@brocku.ca, 688-5550, ext. 3035), who can provide answers to pertinent questions about the research participants' rights.

Signature: _____

Date: _____

Information and Consent Form: Study 2

Information Sheet and Consent Form

This form is intended to give information and invite your participation in a study looking at how personality traits relate to success at judging vulnerability in others. This research is being conducted through the Psychology Department at Brock University by Sarah Wheeler Stephenson, Kimberly Costello, and Natalie Gauthier under the supervision of Dr. Angela Book. This study has been reviewed and received ethical clearance through the Research Ethics Board at Brock University (REB file # 09-040). One of the copies of this form is for our records, and you are asked to keep the other copy for your own records.

Should you decide to participate, you will be asked to view 12 short video recordings of individuals walking through a hallway. After each video, you will be required to rate how vulnerable you believe each individual would be to victimization using a 0-10 scale, and indicate whether you believe that person has been a victim or has not. Next, you will be shown a set of seven videos, each portraying the same woman. You will be asked to rate how vulnerable she appears in each video. Finally, you will be asked to fill out a personality questionnaire.

Participation in this study will require a maximum of 1 hour of your time, and we offer $10 compensation. Alternatively, you are able to use participation in this study towards an assignment in Psychology 1F90 (or another course that has given such an assignment). You may not receive *both* financial compensation and course participation.

You are not required to participate, and can withdraw at any point without penalty. Should you choose to withdraw, we will destroy any data that has already been collected, and you will still be able to receive course participation or receive $10. The information that you give will in no way be linked to your name, but will be identified with an arbitrary number. The data from this study will be published in the form of journal articles. There are no foreseeable risks to your involvement in this study.

By signing below, you state that you understand that your participation is entirely voluntary:

I have read the above letter of information/consent and freely agree to participate in "Personality and Vulnerability II". I am aware that I can contact Sarah Wheeler Stephenson (ss04de@brocku.ca) or Dr. Angela Book (abook@brocku.ca) with any question, concern, or complaint that I have regarding this research. I am also aware that I may contact the Research Ethics Officer (reb@brocku.ca; 905-688-5550 x. 3035), who can provide answers to pertinent questions about the research participants' rights.

Signature: _____

Date: _____

Appendix C

Feedback Letters

Feedback Letter: Study 1

Debriefing Sheet

Thank you again for your participation in "Personality and Life Events Phase I", a study looking at how certain interpersonal and personality traits correlate with the ability to judge life events and self-concept in others. This research was conducted through the Psychology Department at Brock University by Sarah Wheeler Stephenson, Kimberly Costello, and Natalie Gauthier under the supervision of Dr. Angela Book. The study has been reviewed and has received ethical clearance through the Research Ethics Board at Brock University (REB file # 09-040).

In this study, you were videotaped walking through the hallway on your way to the study, you were photographed, and then asked to fill out a questionnaire. The photograph will be deleted as it is not necessary for the study. We did not inform you that you would be videotaped because it was essential that we obtain natural body language. The collected videotape will be coded for body language cues that have been associated with victimization, including the arm, leg, and head movements while walking. These videotapes will also be shown to student and inmate samples at a later date, and they will rate each video for vulnerability to victimization. You will be able to choose how we will be able to use your videotape by agreeing (or not agreeing) on the Video Consent Form. We will make note of your choices and attach that information (without your name) to the video file.

We hope to establish a relationship between antisocial behavior (on the part of the rater) and the ability to judge vulnerability in others. In order to assess your vulnerability, we will evaluate the number and type of negative life events you reported on the Life Events Inventory. In Phase II of this study, we will assess raters' level of antisocial behavior, and then ask raters to view the video collected in Phase I and provide a vulnerability estimate for each video. For your benefit, we are providing a list of body language cues that indicate confidence and assertiveness, which reduce the likelihood of victimization.

You are free to refuse participation at this point, and all data (including the videotape) will be deleted/destroyed in front of you. Should you decide at a later date that you would like to withdraw your participation, please retain this debriefing form (with the participant # on it), and refer to the number when asking for your data/video to be deleted.

As compensation for your participation in this study, you are receiving $20. Should you decide to withdraw at this point, you will still receive the $20.

Again, the information that you gave was completely confidential, and your facial features were not recorded. Should you wish to speak with someone concerning past experiences, free and confidential counseling can be accessed by Brock students at 905-688-5550 x. 4750. In the event that you have any complaints, concerns or questions about this research, please feel free to contact Sarah Stephenson (ss04d@brocku.ca) or Dr. Angela Book, (688-5550, ext. 5223; abook@brocku.ca). You may also contact the Research Ethics Officer (mail to reb@brocku.ca; 688-5550, ext. 3035), who can provide answers to pertinent questions about the research participants' rights.

Body Language Associated with Assertiveness and Confidence

1. Walk like you have a purpose/goal.
2. Keep your head up while walking, and use eye contact (don't avert your eyes).
3. Practice walking with synchronous movements. For instance:
    a. Walk with a stride that is medium in length- neither too short nor too long.
    b. Walk with your feet placed no wider than the width of your hips.
    c. Ensure your knees bend naturally and are not stiff or held straight.
    d. Walk with energy, as if you are well-rested and alert.
    e. Relax your neck so that your head moves naturally as you walk. It should not look like a stiff extension of your spine.

In short, movement should be fluid, incorporate all parts of your body, and not be very distinctive.

Feedback Letter: Study 2

Debriefing Sheet

Thank you again for your participation in "Personality and Life Events Phase II", a study looking at how certain interpersonal and personality traits correlate with the ability to judge vulnerability in others. This research was conducted through the Psychology Department at Brock University by Sarah Wheeler Stephenson, Kimberly Costello, and Natalie Gauthier, under the supervision of Dr. Angela Book. The study has been reviewed and received ethical clearance through the Research Ethics Board at Brock University (REB file # 09-040).

In this study, you were asked to rate individuals on their vulnerability to victimization, judge whether they had been a victim or not, and fill out a questionnaire assessing interpersonal and personality traits, particularly antisocial behavior. We were specifically interested in the relationship between levels of antisociality and the ability to judge vulnerability in others. That is, we will correlate your levels of antisociality, and your accuracy in predicting targets' vulnerability. (It is extremely important to remember that everyone possesses some level of antisociality, sometimes acting in their own best interest at the expense of others, or not caring how others feel. In fact, recent research has confirmed that there is no definitive border between those with normal levels of antisociality and those with abnormally high levels of antisociality). Finally, we will use your ratings of the final seven videos to assess which body movements are most influential in communicating a sense of vulnerability.

Your responses on the questionnaire are completely confidential, and can in no way be linked to your name. All of the information that you gave will be kept in a locked laboratory, and only researchers in this lab will have access to it.

In the event that you have any complaints, concerns or questions about this research, please feel free to contact Sarah Wheeler Stephenson (ss04de@brocku.ca) or Dr. Angela Book (abook@brocku.ca). You may also contact the Research Ethics Officer (mail to reb@brocku.ca, 688-5550, ext. 3035), who can provide answers to pertinent questions about the research participants' rights.

Appendix D

Life Events Inventory

Life Event	How many times it occurred	Impact of event*
Reconciliation or Repaired Relationship		
Life-threatening Illness		
Lost item of great importance		
Unemployment		
Mugging		
Troubled relationship		
Bought/sold house		
Taking care of elderly parents		
Pregnancy		
Stalked		
Started University or College		
Insomnia		
Bullied		
Loss/harm of loved one (traumatic or not)		
Major change at work		
Vacation		
Legal problems		
Minor illness of loved one		
Sexual assault, or attempted assault		
Sexual abuse		
Started/sold a business		
Loss of important relationship (ex. separation)		
Homelessness		
Long working hours/bad working conditions		
Got married		
Endured natural distaster		
New job		
Physical abuse		
Minor illness		
Renovations		
Broken engagement		
Roomate moved in/out		
Imprisonment		
New friendship/relationship		
Robbery		
Involved in warfare/combat		
New child		
Cheated/conned		
Infidelity		
Unexpected influx of money		
Emotional abuse		
Life-threatening accident		
Graduated		
Threatened with/without weapon		
Financial problems		
Became engaged		
Witnessed death/assault		
Moved		
Severe Childhood Neglect		

* (0-10; 0 = no impact, 10 = very impactful)

Overall, how vulnerable to victimization do you feel? (0-10; 0 = not vulnerable at all, 10 = very vulnerable)

Appendix E

Video Consent Form

Video Consent Form

First, you should realize that the chances of being recognized in this video are very small, though it is possible. Keep this in mind as you decide whether to allow use of your videotape for the following purposes. There will be no indication of your name or any personal information on the videotape.

1. I agree to have my video recording rated by undergraduate students in a future study.

_____ _____

Signature Date

2. I agree to have my video recording rated by inmates in a future study.

_____ _____

Signature Date

3. I agree to have my video recording used for teaching purposes (illustrating body language).

_____ _____

Signature Date

4. I agree to have my video recording used for illustrative purposes in the media (documentaries, news, etc…).

_____ _____

Signature Date

5. I do not wish to have my video recording used for any purpose other than for the coding done in the original study.

_____ _____

Signature Date

6. I do not wish to have my video recording used for any purpose.

_____ _____

Signature Date

Appendix F

Rater Participant Rating Scale

Video	**Vulnerability** (0-10; 0 = not vulnerable at all, 10 = very vulnerable)	**Victim or Non-victim?**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Next, you will be shown a set of seven videos, all featuring the same woman. Please rate how vulnerable she looks in each video:

Video	**Vulnerability** (0-10; 0 = not vulnerable at all, 10 = very vulnerable)
1	
2	
3	
4	
5	
6	
7	

Appendix G

The Self-Report Psychopathy Scale

(Paulhus, et al., in press)

Please rate the degree to which you agree with the following statements.

1 = Disagree Strongly
2 = Disagree
3 = Neutral
4 = Agree
5 = Agree Strongly

1. I'm a rebellious person ____
2. I'm more tough-minded than other people ____
3. I think I could "beat" a lie detector _____
4. I have taken illegal drugs (ex. marijuana, ecstasy) ____
5. I have never been involved in delinquent gang activity ____
6. I have never stolen a truck, car, or motorcycle ____
7. Most people are wimps ____
8. I purposely flatter people to get them on my side ____
9. I've often done something dangerous just for the thrill of it ____
10. I have tricked someone into giving me money ____
11. It tortures me to see an injured animal ____
12. I have assaulted a law enforcement official or social worker ____
13. I have pretended to be someone else in order to get something ____
14. I always plan out my weekly activities ____
15. I like to see fist-fights ___
16. I'm not tricky or sly ____
17. I'd be good at a dangerous job because I make fast decision ____
18. I have never tried to force someone to have sex ____
19. My friends would say that I am a warm person ____
20. I would get a kick out of "scamming" someone ____
21. I have never attacked someone with the idea of injuring them ____
22. I never miss appointments ____
23. I avoid horror movies ____
24. I trust other people to be honest ____
25. I hate high speed driving ____
26. I feel so sorry when I see a homeless person ____
27. It's fun to see how far you can push people before they get upset ____
28. I enjoy doing wild things ____
29. I have broken into a building or vehicle in order to steal something or vandalize ____
30. I don't bother to keep in touch with my family any more ____
31. I find it difficult to manipulate people ____
32. I rarely follow the rules ____
33. I never cry at movies ____
34. I have never been arrested ____

35. You should take advantage of other people before they do it to you ____
36. I don't enjoy gambling for real money ____
37. People sometimes say I'm coldhearted ____
38. People can usually tell if I'm lying ____
39. I like to have sex with people I barely know ____
40. I love violent sports and movies ____
41. Sometimes you have to pretend you like people to get something out of them ____
42. I am an impulsive person ____
43. I have taken hard drugs (ex. heroin, cocaine) ____
44. I'm a soft-hearted person ____
45. I can talk people into anything ____
46. I never shoplifted from a store ____
47. I don't enjoy taking risks ____
48. People are too sensitive when I tell them the truth about themselves ____
49. I was convicted of a serious crime ____
50. Most people tell lies every day ____
51. I keep getting in trouble for the same things over and over ____
52. Every now and then I carry a weapon (knife or gun) for protection ____
53. People cry way too much at funerals ____
54. You can get what you want by telling people what the want to hear ____
55. I easily get bored ____
56. I never feel guilty over hurting others ____
57. I have threatened people into giving me money, clothes etc. ____
58. A lot of people are "suckers" and can easily be fooled ____
59. I admit that I often "mouth off" without thinking ____
60. I sometimes dump friends that I don't need anymore ____
61. I would never step on others to get what I want ____
62. I have close friends who served time in prison ____
63. I purposely tried to hit someone with the vehicle I was driving ____
64. I have violated my probation from prison ____

Appendix H

Vulnerable Body Language Cues

(adapted from Grayson & Stein, 1981)

1. stride length: distance measured by a step.
   - short
   - medium
   - long

2. stride width:
   - wide: stride extends beyond hip joint
   - narrow: within boundaries of hip joint

3. knees:
   - bent
   - straight

4. relation to uprightness: body's relationship to gravity in space.
   - vertical/ horizontal/ sagittal (back and forth)
   - neutral (erect, upright without any spatial stress)

5. type of weight shift: the shift that occurs when transferring weight from one foot to the other while walking. Movement usually starts at the pelvis.
   - primarily lateral (weight shifted side to side)
   - three-dimensional (pelvis operates in a spiral and achieves a three-dimensional quality)
   - primarily up/down (weight shift causes a bounce because body goes up and down)
   - primarily forward/back (a sagittal movement)

6. type of walk:
   - postural (movement activates the whole body)
   - gestural (movement activates only part of the body)
   - non-specific (other)

7. type of energy:
   - held (energy retained in body)
   - relaxed (energy permitted to flow easily)
   - non-specific (other)

8. amount of energy: relative amounts of energy used
   - low
   - medium
   - high

9. use of whole body:
   - mainly lower moves (body moves from waist down, upper body held),

- upper vs. lower (upper and lower parts move separately, sometimes in opposition to each other)
- variations in rhythm (no continuous pattern in body movement)
- continuous

10. body movement:
    - Unilateral (one side of body or one limb used)
    - contralateral (two sides of body move in counterpoint – right arm, left leg then left arm, right leg)

11. head
    - undifferentiated (head moves as unit with spine)
    - gestural (head moves as a separate unit in relation to the spine)

12. gaze:
    - straight ahead
    - down
    - non-specific

13. feet:
    - swung
    - lifted

14. left arm type of movement:
    - swung
    - other

15. left arm amount moved:
    - whole
    - part

16. left arm hold:
    - held
    - relaxed

17. right arm type of movement:
    - swung
    - other

18. right arm amount moved:
    - whole
    - part

19. right arm hold:
    - held
    - relaxed

Appendix I

Scoring Keys

Scoring for Self-Report Psychopathy Scale- Version III (SRP-III)

Reverse-keyed items (1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1) are marked (R).

Interpersonal Manipulation facet = 3 + 8 + 13 + 16 (R) + 20 + 24 (R) + 27 + 31 (R) + 35 + 38 (R) + 41 + 45 + 50 + 54 + 58 + 61 (R)

Callous Affect = 2 + 7 + 11 (R) + 15 + 19 (R) + 23 (R) + 26 (R) + 30 + 33 + 37 + 40 + 44 (R) + 48 + 53 + 56 + 60

Erratic Lifestyle = 1 + 4 + 9 + 14 (R) + 17 + 22 (R) + 25 (R) + 28 + 32 + 36 (R) + 39 + 42 + 47 (R) + 51 + 55 + 59

Antisocial Behaviour = 5 (R) + 6 (R) + 10 + 12 + 18 (R) + 21 (R) + 29 + 34 (R) + 43 + 46 (R) + 49 + 52 + 57 + 62 + 63 + 64

Factor 1 = Interpersonal Manipulation facet + Callous Affect facet

Factor 2 = Erratic Lifestyle facet + Antisocial Behaviour facet

Scoring for Vulnerable Body Language Cues

1. stride length: distance measured by a step.
   - short, long = 1
   - medium = 0

2. stride width:
   - wide: stride extends beyond hip joint = 1
   - narrow: within boundaries of hip joint = 0

3. knees:
   - bent = 0
   - straight = 1

4. relation to uprightness: body's relationship to gravity in space.
   - vertical/ horizontal/ sagittal (back and forth) = 1
   - neutral (erect, upright without any spatial stress) = 0

5. type of weight shift: the shift that occurs when transferring weight from one foot to the other while walking. Movement usually starts at the pelvis.
   - primarily lateral (weight shifted side to side), primarily up/down (weight shift causes a bounce because body goes up and down), primarily forward/back (a sagittal movement) = 1
   - three-dimensional (pelvis operates in a spiral and achieves a three-dimensional quality) = 0

6. type of walk:
   - postural (movement activates the whole body) = 0
   - gestural (movement activates only part of the body), non-specific (other) = 1

7. type of energy:
   - held (energy retained in body), non-specific (other) = 1
   - relaxed (energy permitted to flow easily) = 0

8. amount of energy: relative amounts of energy used
   - low , high = 1
   - medium = 0

9. use of whole body:
   - mainly lower moves (body moves from waist down, upper body held), upper vs. lower (upper and lower parts move separately, sometimes in opposition to each other). variations in rhythm (no continuous pattern in body movement) = 1
   - continuous = 0

10. body movement:
    - Unilateral (one side of body or one limb used) = 1
    - contralateral (two sides of body move in counterpoint – right arm, left leg then left arm, right leg) = 0

11. head
    - undifferentiated (head moves as unit with spine) = 0
    - gestural (head moves as a separate unit in relation to the spine) = 1

12. gaze:
    - straight ahead = 0
    - down, non-specific = 1

13. feet:
    - swung = 0
    - lifted = 1

14. left arm type of movement:
    - swung = 0
    - other = 1

15. left arm amount moved:
    - whole = 0
    - part = 1

16. left arm hold:
    - held = 1
    - relaxed = 0

17. right arm type of movement:
    - swung = 0
    - other = 1

18. right arm amount moved:
    - whole = 0
    - part = 1

19. right arm hold:
    - held = 1
    - relaxed = 0

Sum all items. Higher scores indicate greater vulnerability.

Appendix J

Ethics Clearance Form

DATE: October 30, 2009

FROM: Michelle McGinn, Chair
Research Ethics Board (REB)

TO: Angela Book, Psychology
Sarah Wheeler Stephenson, Kinberley Costello

FILE: 09-040 BOOK
Masters Thesis/Project

TITLE: Personality and Life Events Phase I and II

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: Accepted as Clarified.

This project has received ethics clearance for the period of October 30, 2009 to June 1, 2010 subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance period may be extended upon request. The study may now proceed.

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and cleared by the REB. During the course of research no deviations from, or changes to, the protocol, recruitment, or consent form may be initiated without prior written clearance from the REB. The Board must provide clearance for any modifications before they can be implemented. If you wish to modify your research project, please refer to http://www.brocku.ca/research/policies-and-forms/forms to complete the appropriate form Revision or Modification to an Ongoing Application.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects upon completion of the project. Researchers with projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form Continuing Review/Final Report is required. Please quote your REB file number on all future correspondence.

MM/kw
Research Ethics Office
Brock University | Brock Research
500 Glenridge Avenue | St. Catharines, ON L2S 3A1
www.brocku.ca | 905.688.5550 x 3035